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EXAMINER	
KAO, CHIH CHENG G	

ART UNIT	PAPER NUMBER
2882	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/707,435	WAWRO ET AL.
	Examiner	Art Unit
	Chih-Cheng Glen Kao	2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14-35,38-51 and 61-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14-35,38-51 and 61-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 35 and 63-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 35, the phrase "may be" in line 2 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 63-66 are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 4, 6, 8-12, 14, 15, 23, 24, 26, 28-35, 38, 46, 62-64, and 66 are rejected under 35 U.S.C. 102(b) as being anticipated by Magnusson et al. (US Patent 5598300).

3. Regarding claims 1, 15, 35, and 38, Magnusson et al. discloses system and method comprising a waveguide grating device (fig. 1) comprising at least one waveguide, through which a signal having at least one wavelength may be propagated (figs. 13 and 14), having a proximal end and a distal end having an endface (fig. 1, d_1), and a guided-mode resonance waveguide grating (fig. 1, d_{n-1} to d_{n+1}) fabricated on the endface of the at least one waveguide (fig. 1, d_1), the guided-mode resonance waveguide grating having at least one waveguide layer (fig. 1, d_{n-1}) and at least one grating layer (fig. 1, d_n), the waveguide grating also necessarily having a plurality of parameters including at least one permittivity of the at least one grating layer, permittivity of the at least one waveguide layer, periodic structure of the at least one grating layer, grating fill factor of the at least one grating layer, thickness of the at least one waveguide layer, and the thickness of the at least one grating layer (col. 7, lines 23-27, and fig. 3a), the periodic structure of the at least one grating layer having a period less then the at least one wavelength of the signal (col. 4, lines 60-67).

4. Regarding claims 3 and 23, Magnusson et al. further discloses wherein the at least one waveguide is rectangular in shape (fig. 1, d_1).

5. Regarding claims 4, 6, 24, 26, and 46, Magnusson et al. further discloses wherein the at least one grating layer and the at least one waveguide layer comprise a dielectric material (col. 2, lines 24-26, and col. 12, lines 48-50).

6. Regarding claims 8, 28, and 63, Magnusson et al. further discloses wherein the at least one grating layer and the at least one waveguide layer comprise the same layer (fig. 1, d_n).

7. Regarding claims 9, 29, and 64, Magnusson et al. further discloses wherein the at least one grating layer and the least one waveguide layer comprise different layers in contact with each other (fig. 1, d_{n-1} and d_n).

8. Regarding claims 10-12 and 30, Magnusson et al. further discloses at least a third layer comprising a dielectric material (col. 2, lines 24-26, and col. 12, lines 48-50) or metal (col. 12, lines 48-50) in contact with the at least one waveguide layer (fig. 1, d_{n-2}).

9. Regarding claims 14 and 31, Magnusson et al. further discloses a third layer (fig. 1, d_{n+1}) in contact with the at least one grating layer (fig. 1, d_n).

10. Regarding claims 32-34, a recitation with respect to the manner in which a claimed apparatus is intended to be employed fails to differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

11. Regarding claims 62 and 66, Magnusson et al. further discloses the grating and waveguide layers having different permittivities (fig. 1).

12. Claims 1-4, 6, 9, 38, 39, 46, and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Farah (US Patent 5891747).

13. Regarding claims 1 and 38, Farah discloses a device and method comprising at least one waveguide having and an end and endface (fig. 4b, #6) and a waveguide grating on the endface having at least one waveguide layer and at least one grating layer (fig. 4b, #43).

14. Regarding claims 2 and 3, Farah further discloses at least one waveguide being a fiber (fig. 4a, #6) or rectangular in shape (fig. 14, #86).

15. Regarding claims 4, 6, and 9, Farah further discloses the at least one grating layer and waveguide layer being a dielectric material (col. 13, lines 5-7) and being different layers in contact with each other (fig. 4b, #6 and 43).

16. Regarding claim 39, Farah further discloses cleaving (col. 5, lines 15-17).

17. Regarding claims 46 and 47, Farah further discloses etching at least one dielectric grating (col. 14, lines 62-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 1, 3, 4, 15, 35, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. (US Patent 5216680) in view of Magnusson et al. ('300).

19. Regarding claims 1, 15, 35, and 38, Magnusson et al. ('680) discloses a device and method comprising at least one waveguide having and an end and endface (fig. 3a, #24, or fig. 3e, #34) and a waveguide grating on the endface having at least one grating layer (figs. 1 and 3e, #10).

However, Magnusson et al. ('680) fails to specifically disclose a waveguide grating having at least one waveguide layer, the waveguide grating also having a plurality of parameters including at least one permittivity of the at least one grating layer, permittivity of the at least one waveguide layer, periodic structure of the at least one grating layer, grating fill factor of the at least one grating layer, thickness of the at least one waveguide layer, and the thickness of the at least one grating layer, the periodic structure of the at least one grating layer having a period less then the at least one wavelength of the signal.

Magnusson et al. ('300) teaches a waveguide grating having at least one waveguide layer (fig. 1, d_{n-1}), the waveguide grating also necessarily having a plurality of parameters including at least one permittivity of the at least one grating layer, permittivity of the at least one waveguide layer, periodic structure of the at least one grating layer, grating fill factor of the at least one grating layer, thickness of the at least one waveguide layer, and the thickness of the at least one

grating layer (col. 7, lines 23-27, and fig. 3a), the periodic structure of the at least one grating layer having a period less then the at least one wavelength of the signal (col. 4, lines 60-67).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device and method of Magnusson et al. ('680) with the grating of Magnusson et al. ('300), since one would be motivated to make such a modification for having a better filter with no or very low sidebands (col. 2, lines 17-20) as implied from Magnusson et al. ('300).

20. Regarding claim 3, Magnusson et al. ('680) further discloses wherein the at least one waveguide is rectangular in shape (fig. 3a, #24, or fig. 3e, #34).

21. Regarding claim 4, Magnusson et al. ('680) further discloses wherein the at least one grating layer comprises a dielectric material (col. 6, line 40) and being different layers in contact with each other (fig. 4b, #6 and 43).

22. Claims 2 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claims 1 and 15 above, and further in view of Dawes et al. (US Patent 6488414).

Magnusson et al. ('300) discloses a device and system as recited above.

However, Magnusson et al. ('300) fails to disclose at least one waveguide being a fiber.

Dawes et al. teaches at least one waveguide being a fiber (title and fig. 5).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device and system of Magnusson et al. ('300) with the fiber of Dawes et al., since one would be motivated to make such a modification to send an optical signal over a longer distance with less signal loss.

23. Claims 5, 7, 25, 27, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claims 1, 15, and 38 above, and further in view of Tibuleac ("Characteristics of Reflection and Transmission Waveguide-Grating Filters").

Magnusson et al. ('300) discloses a device, system, and method as recited above.

However, Magnusson et al. ('300) fails to disclose wherein at least one grating layer and at least one waveguide layer comprise a polymer.

Tibuleac teaches wherein at least one grating layer and at least one waveguide layer comprise a polymer (page 94, lines 1-3).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device, system, and method of Magnusson et al. ('300) with the polymer of Tibuleac, since it would be within the general skill of a worker in the art to select a known material on the basis of its suitability. One would be motivated to make such a modification to more easily shape the layer and create a stronger material.

24. Claims 16-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claim 15 above, and further in view of Liu et al. ("High-efficiency guided-mode resonance filter").

Magnusson et al. ('300) discloses a system as recited above. Magnusson et al. ('300) further discloses a signal propagating through at least the one waveguide, wherein after the signal is propagated, it contacts the grating and is reflected from the grating in whole or in part depending at least partially upon the plurality of variable parameters (fig. 2B, "R").

However, Magnusson et al. ('300) fails to disclose a laser source, which is a continuous wave source, and an operationally coupled photodetector comprising the human eye.

Liu et al. teaches a laser source (fig. 2, "laser"), which is a continuous wave source, and an operationally coupled photodetector (fig. 2, detector) comprising the human eye (fig. 2, PC or looking at the output from the filter).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Magnusson et al. ('300) with the laser source and detector of Liu et al., since one would be motivated to make such a modification to more easily measure the characteristics of the filter (fig. 2) as implied from Liu et al.

25. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) and Liu et al. as applied to claim 19 above, and further in view of Layton (US Patent 4753529).

Magnusson et al. ('300) as modified above suggests a system as recited above.

However, Magnusson et al. ('300) fails to disclose a detector comprising silicon.

Layton teaches a detector comprising silicon (col. 14, lines 10-15).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Magnusson et al. ('300) as modified above

with the silicon detector of Layton, since one would be motivated to make such a modification to reduce noise (col. 14, lines 4-15) as implied from Layton for a better signal.

26. Claims 39 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claims 38 and 46 above, and further in view of Dawes et al. and Farah (US Patent 5891747).

Magnusson et al. ('300) discloses a method as recited above.

However, Magnusson et al. ('300) fails to disclose cleaving an end to form an endface of at least one waveguide and etching.

Dawes et al. necessarily cuts an end to form an endface of at least one waveguide (col. 3, line 57) for adhering an optical element. Farah teaches cleaving (col. 5, lines 15-17) and etching (col. 14, lines 62-65).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) with the cutting of Dawes et al., since one would be motivated to make such a modification to make it easier to connect one component to another (fig. 2) as implied from Dawes et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) as modified above with the cleaving and etching of Farah, since one would be motivated to make such a modification for more precise cuts (col. 5, lines 15-17) as implied from Farah.

27. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) and Tibuleac as applied to claim 40 above, and further in view of Dawes et al. and Grabbe (US Patent 5863449).

For purposes of being concise, Magnusson et al. ('300) in view of Tibuleac and Dawes et al. suggests a method as recited above.

However, Magnusson et al. ('300) fails to disclose dipping.

Grabbe teaches dipping (col. 3, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) as modified above with the dipping of Grabbe, since one would be motivated to make such a modification for more easily adding additional layers on the endface (col. 3, lines 30-40) as implied from Grabbe.

28. Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300), Tibuleac, Dawes et al., and Grabbe as applied to claim 41 above, and further in view of Hobbs (WO 97/47997).

Magnusson et al. ('300) as modified above suggests a method as recited above.

However, Magnusson et al. ('300) fails to disclose holographic interferometry or photolithography patterning.

Hobbs further teaches holographic interferometry (Page 1, "Field of Invention") or photolithography patterning (Page 2, top paragraph).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) as modified above

with the patterning techniques of Hobbs, since one would be motivated to make such a modification to produce periodic structures more accurately (Page 1, "Field of Invention") as implied from Hobbs.

29. Claims 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) and Tibuleac as applied to claims 40 and 38 above, and further in view of Levenson et al. (US Patent 5291574).

Magnusson et al. ('300) as modified above suggests a method as recited above.

However, Magnusson et al. ('300) fails to disclose spin coating or sputtering.

Levenson et al. teaches spin coating or sputtering (col. 2, lines 33-36).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) as modified above with the spin coating or sputtering of Levenson et al., since one would be motivated to make such a modification to add layers more evenly (col. 2, lines 33-36) as implied from Levenson et al. for easier manufacturing.

30. Claims 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claim 38 above, and further in view of Dimos et al. (US Patent 6096127).

Magnusson et al. ('300) as modified above suggests a method as recited above.

However, Magnusson et al. ('300) fails to disclose thermal evaporation, electron-beam evaporation, or liquid phase epitaxy.

Dimos et al. teaches thermal evaporation, electron-beam evaporation, or liquid phase epitaxy (col. 1, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Magnusson et al. ('300) as modified above with the various depositing methods of Dimos al., since these methods are well known in the art. One would be motivated to make such modifications to deposit layers more evenly (col. 1, lines 30-50) as implied from Dimos et al.

31. Claims 61 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. ('300) as applied to claims 15 and 35 above, and further in view of Magnusson et al. ("Guided-mode resonance Brewster filter").

Magnusson et al. ('300) discloses a device and system as recited above.

However, Magnusson et al. ('300) fails to disclose the permittivities of the at least one waveguide and the at least one grating layer being the same.

Magnusson et al. (Letters) teaches the permittivities of the at least one waveguide and the at least one grating layer being the same (fig. 1, $n_s = n_{1L}$).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device and system of Magnusson et al. ('300) with the same permittivities of Magnusson et al. (Letters), since one would be motivated to make such a modification for creating higher efficiency filters at Brewster angles (abstract) as implied from Magnusson et al. (Letters).

Response to Arguments

32. Applicant's arguments filed 12/2/05 have been fully considered but they are not persuasive.

In paragraphs 6 of the declaration and D1-D4 of Applicant's remarks, Applicant argues that Magnusson et al. ('300) fails to disclose at least one waveguide and a guided-mode resonance waveguide grating, since removing one of the layers as the waveguide will deviate from the grating's design, and the grating will no longer work as intended. The Examiner disagrees with this logic. Although removal of a waveguide or waveguide layer may deviate from the grating's design, this does not mean that the grating of Magnusson et al. ('300) fails to read on the claimed invention. The Examiner has interpreted the claim to read on a waveguide being part of the grating. Therefore, the grating of Magnusson et al. ('300) reads on the claimed invention.

In paragraphs 7 of the declaration and D5 of Applicant's remarks, Applicant further argues that the waveguide of Magnusson et al. ('300) fails to disclose that it be rectangular in shape. The Examiner disagrees. As pointed out by Applicant, the cross-section of the waveguide is rectangular. Therefore, the waveguide of Magnusson et al. ('300) reads on a waveguide rectangular in shape.

In paragraphs 8 of the declaration and D6 of Applicant's remarks, Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant's argument, in paragraphs 10 of the declaration and E1-E2 of the Applicant's remarks, that the references fail to show certain features of Applicant's invention, it is noted that the features upon which Applicant relies (i.e., "eliminating higher order waves") are

not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

In paragraphs 12 of the declaration and F of Applicant's remarks, Applicant argues that it does not make sense to combine Dawes et al. and Magnusson et al. ('300). The Examiner disagrees. Dawes et al. is concerned with controlling light emission through an assembly function. Magnusson et al. ('300) is also concerned with controlling light emission through an assembly. Therefore, it would have been obvious to combine one with the other.

In conclusion, Applicant's arguments are not persuasive, and the claims remain rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gk

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER